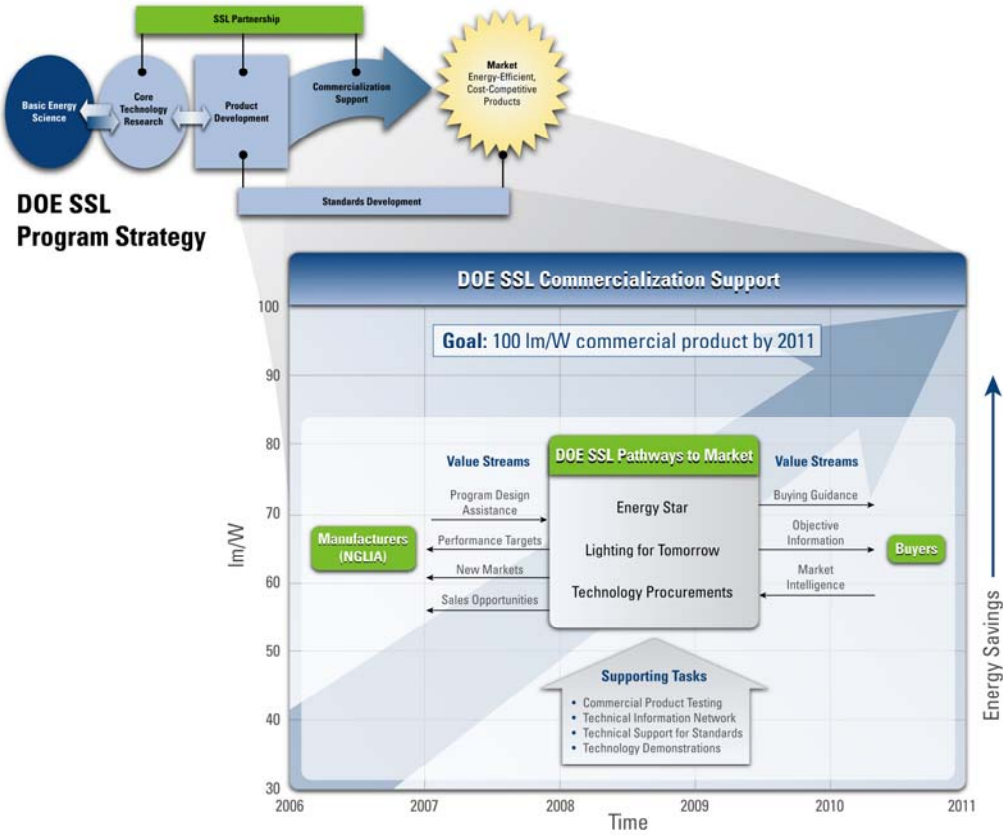
DOE Solid-State Lighting Portfolio

Guiding Market Introduction of High Efficiency, High-Performance SSL Products

The U.S. Department of Energy (DOE) has developed a comprehensive national strategy to guide solid-state lighting (SSL) technology from lab to market. To leverage DOE's $100 million investment in SSL technology research and development (R&D), and to increase the likelihood that this R&D investment pays off in commercial success, DOE has developed a commercialization support plan. The plan focuses DOE resources on strategic areas to move the SSL market toward the highest energy efficiency and the highest lighting quality.

DOE's plan draws on key partnerships with the SSL industry, research community, standards setting organizations, energy efficiency groups, utilities, and others, as well as lessons learned from the past. Commercialization support activities are closely coordinated with research progress to ensure appropriate application of SSL products, and avoid buyer dissatisfaction and delay of market development. The diagram below details the key components of DOE's commercialization support strategy, and how they relate to DOE's goals for luminous efficacy over time.

DOE SSL PATHWAYS TO MARKET



DOE SSL Pathways to Market

DOE supports three key pathways to market: ENERGY STAR®, the Lighting for Tomorrow Design Competition, and Technology Procurement. These pathways, described below, provide manufacturers with performance targets and information on new markets and sales opportunities. They provide buyers with objective information and purchasing guidance. In return, DOE partners including the Next Generation Lighting Industry Alliance (NGLIA) and the Technical Information Network provide feedback to guide DOE planning and program design.

ENERGY STAR for SSL. ENERGY STAR is a voluntary energy efficiency labeling program that helps consumers to identify products that save energy, relative to standard technology. DOE issued draft ENERGY STAR criteria for SSL luminaires in December 2006.

Lighting for Tomorrow Design Competition. In partnership with the American Lighting Association and the Consortium for Energy Efficiency, DOE sponsors Lighting for Tomorrow, a design competition that encourages and recognizes excellence in design of energy-efficient residential light fixtures. In 2006, a solid-state lighting competition was added to the existing program focused on compact fluorescent lighting (CFL) fixtures.

Technology Procurement. Technology procurement is an established process for encouraging market introduction of new products that meet certain performance criteria. DOE has employed this approach successfully with other lighting technologies, including sub-CFLs and reflector CFLs. DOE plans to employ technology procurement to encourage adoption of new SSL systems and products that meet established energy efficiency and performance criteria, and link these products to volume buyers and market influencers.

Additional Activities Support Primary Pathways

- **Commercial Product Testing Program.** DOE's SSL Commercial Product Testing Program provides unbiased information on the performance of commercially-available SSL products. The test results guide DOE planning for ENERGY STAR and technology procurement activities, provide objective product performance information to the public, and inform the development and refinement of standards and test procedures for SSL products.
- **Technical Information Network.** DOE's technical information network facilitates learning and promotes energy efficiency and quality in the deployment of SSL. The network, comprised of energy efficiency program sponsors, utilities, lighting researchers and designers, and others, will meet regularly to share technical information about SSL and to provide feedback from the market (retailers, builders, and consumers) on market needs and barriers.
- **Technical Support for Standards.** LEDs differ significantly from traditional light sources, and new test procedures and industry standards are needed to measure their performance. DOE provides leadership and support to accelerate the standards development process, facilitating ongoing collaboration among standards setting organizations and offering technical assistance in the development of new standards.
- **Technology Demonstrations.** DOE is planning SSL technology demonstrations in both the residential and commercial building sectors to provide real-life experience and data involving SSL installations in various applications. DOE will verify performance of the selected SSL products, including measurement of energy consumption, light output, color consistency, and interface/control issues. Demonstration results will inform DOE technology procurement activities and provide buyers with reliable data on product performance.